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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,641	01/27/2004	Will Allen	200313916-1	6594

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INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

TRAN, HENRY N

ART UNIT	PAPER NUMBER
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2629

MAIL DATE	DELIVERY MODE
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06/07/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/766,641	Applicant(s) ALLEN ET AL.	
	Examiner Henry N. Tran	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The Amendment received 4/23/2007 has been considered in preparing this Office action. Applicants' amendments to the specification and the claims, and the remarks have overcome the objections and rejections recited in the prior Office action mailed 1/9/07. Therefore, the objections and rejections recited in said Office action have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Katoh et al (US 2003/0090597 A1) and Brown Elliott (US 2005/0104908 A1). The rejections are set forth follows.

Claim Objections

2. Claims 2, 16, and 24 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of the independent claims 1, 13, and 23, respectively. Applicant is required to cancel the claims, or amend the claims to place the claims in proper dependent form, or rewrite the claims in independent form.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 and 6-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katoh et al. (US 2003/0090597 A1, "Katoh") in view of Brown Elliott (US 2005/0104908 A1)

Regarding claim 13, Katoh teaches a system for displaying an image, the system comprising: an image processing unit (100) adapted to receive image data for the image and to define from the image data a first sub-frame of the image, e.g., R frame, having a plurality of image elements and at least a second sub-frame of the image, e.g., G frame, having a corresponding plurality of image elements, each image element of the second sub-frame being spatially offset an offset distance from a corresponding image element of the first sub-frame; and a display device (13) adapted to display the first sub-frame in a first position and the second sub-frame in a second position with each displayed image element of the second sub-frame spatially offset substantially the offset distance from the corresponding displayed image element of the first sub-frame; see Figures 1, 6 and 37, paragraphs 322, 326, 334 to 338.

However, Katoh does not teach: "a portion of the image represented by an image element of the second subframe and also by at least two image elements of the first sub-frame".

Brown Elliott does teach a system comprising a projector (300) and a display screen (312) for displaying an image having subframes ("planes") of red (306), blue (308), and green images (310); and the image of each subframes is spatially offset ("shifted") by an offset distance of one-half pixel; see Fig. 2, and paragraph 43. Brown Elliott further teaches the green subframe (102) of the image is spatially offset from the red subframe (104) of the image by one-half pixel in the diagonal direction, and that provides "a portion of the image represented by an image element of the second subframe and also by at least two image elements of the first sub-frame"; see Fig. 20, and paragraph 62.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the subframe offset arrangements as taught by Brown Elliott in the Katoh

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system for improving displayed images with higher perceived resolution; see Brown Elliott, paragraph 50.

By this rationale, claim 13 is rejected.

Regarding claims 14-22, Katoh further teaches that: the image processing unit (100) comprising a scaler (126) that is adapted to sub-sample or to interpolate the image data and to perform one of increase and decrease the resolution of the image data; see paragraph 325; the second sub-frame is spatially offset at least one of a vertical distance and a horizontal distance from the first sub-frame; see Figures 6 and 39; the display device includes a plurality of modulating elements (106, 108, and 110) forming a plurality of image regions, e.g., regions of R, G, and B, and a light generator (102) configured to direct a light onto each of the plurality of image regions, the display device being adapted to modulate a first image region with the first sub-frame and a second image region with the second sub-frame, where the plurality of modulating elements includes a single array of modulating elements forming the first and second image regions; where the light includes at least one of a red light band, a green light band, and a blue light band, where the light generator is configured to direct light of the same color on the first and second image regions, or where the light generator is configured to direct light of different colors on the first and second image regions, see Figures 6, 7, 8, and 37. Claims 14-22 are dependent upon the based claim 13; and are therefore rejected on the same reasons set forth in claim 13, and by the reasons discussed above.

Regarding claims 1-4 and 6-12, which are method claims corresponding to the apparatus claims 13-22, are therefore rejected on the same basis set forth in claims 13-22.

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Regarding claims 23-25, which comprise the claimed elements and limitations of claims 13 and 18, rephrased to recite means plus functions; wherein, Katoh in view of Brown Elliott (hereinafter referred to as "Katoh-Brown Elliott") teach all the claimed limitations comprising: Katoh image processing unit (100) is read as means for: receiving image data for the image and means for defining a first sub-frame of the image having a plurality of image elements, and at least a second sub-frame of the image having a corresponding plurality of image elements, with each image element of the second sub-frame spatially offset an offset distance from a corresponding image element of the first sub-frame, displaying first subframe, second subframe, and for direct light onto a plurality of modulating elements according to the first and second subframes (e.g., the processing unit is to control the image shifter 106 and the projection lens 110); and Katoh display device (13) as means for displaying the first sub-frame in a first position and the second sub-frame in a second position, with each displayed image element of the second sub-frame spatially offset substantially the offset distance from the corresponding displayed image element of the first sub-frame, see Figs. 1 and 37; and Brown Elliott does teach a portion of the image represented by an image element of the second subframe and also by at least two image elements of the first sub-frame, see the reference recited in claim 13 above. Claims 23-25 are therefore rejected on the same reasons set forth in claims 13 and by the reasons discussed above.

Regarding claim 26, Katoh further teaches the image processing unit 100 (the computer processor 100) having a system controller (132) for executing a computer program (software), which inherently stores in a system memory for performing the method steps of claims 1, 6 and 7. Claim 26 is therefore rejected.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katoh et al. in view of Brown Elliott ("Katoh-Brown Elliott") as applied to claim 1 above, and further in view of Ferguson (U.S. Patent No. 6,816,141).

Katoh-Brown Elliott teaches generally all except for the third sub-frame of the image and the fourth sub-frame of the image, the fourth sub-frame being spatially offset from the third sub-frame and the third sub-frame and the fourth sub-frame both being spatially offset from the first sub-frame and the second sub-frame; and displaying the third sub-frame in a third position spatially offset from the first position and the second position, and displaying the fourth sub-frame in a fourth position spatially offset from the first position, the second position, and the third position.

Ferguson teaches a first sub-frame, a second sub-frame, a third sub-frame and a fourth sub-frame, see Figure 16A-C, and the image shifter or switch (11), see Figures 1 or 2, as means for performing steps of displaying the second sub-frame including overlapping image elements of the second sub-frame with image elements of the first sub-frame, or further including defining a third sub-frame of the image and a fourth sub-frame of the image, the fourth sub-frame being spatially offset from the third sub-frame and the third sub-frame and the fourth sub-frame both being spatially offset from the first sub-frame and the second sub-frame; and displaying the third sub-frame in a third position spatially offset from the first position and the second position, and displaying the fourth sub-frame in a fourth position spatially offset from the first position, the second position, and the third position, see Figures 38-40, column 41, line 24 to column 42, line 14.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the switch as taught by Ferguson in the Katoh-Brown Elliott system because this would provide an improved display system capable of displaying a desired bright, high resolution and uniform display, see Ferguson, column 41, lines 21-23. Claim 5 is dependent upon the base claim 1; and is therefore rejected on the same reasons set forth in base claim 1, and by the reasons discussed above.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

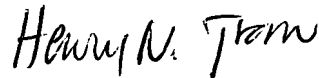
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Henry N. Tran whose telephone number is 571-272-7760. The examiner can normally be reached on M-F 8:00-4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin H. Shalwala can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Henry N Tran
Primary Examiner
Art Unit 2629

5/26/07
HT